

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

OPTIMUM IMAGING TECHNOLOGIES
LLC

Plaintiff,

v.

CANON INC.,

Defendant.

Case No.

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff, Optimum Imaging Technologies LLC (“OIT” or “Plaintiff”) brings this action under the patent laws of the United States, Title 35 of the United States Code, and makes the following allegations against Canon Inc. (“Canon” or “Defendant”) upon information and belief:

THE PARTIES

1. Plaintiff OIT is a Texas limited liability company founded in 2009 and with an address at 8701 Shoal Creek Blvd # 405, Austin, Texas 78757.
2. Upon information and belief, Defendant Canon is a corporation organized and existing under the laws of Japan. Its principal place of business is located at 30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501, Japan.

JURISDICTION AND VENUE

3. This is an action for patent infringement under the patent laws of the United States of America, 35 U.S.C. § 1, *et seq.*

4. This Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331, 1338, and 1367.

5. This Court has personal jurisdiction over Canon because it, directly and through its subsidiaries, divisions, groups, or distributors, has sufficient minimum contacts with this forum as a result of business conducted within the State of Texas, and/or pursuant to Fed. R. Civ. P. 4(k)(2). On information and belief, Canon transacts substantial business in the State of Texas, directly and through agents, including: (i) at least a portion of the infringement alleged herein, and (ii) regularly does or solicits business in Texas, engages in other persistent courses of conduct, maintains continuous and systematic contacts within this Judicial District, purposefully avails itself of the privilege of doing business in Texas, and/or derives substantial revenue from services provided in Texas. For example, on information and belief, Canon sells its products, including those that infringe the Patents-in-Suit, into this district.

6. Furthermore, upon information and belief, Defendant has purposefully and voluntarily placed one or more infringing products into the stream of commerce with the expectation that they will be purchased and/or used by residents of this judicial District, including by directly and indirectly working with distributors, and other entities located in the State of Texas, to ensure the accused products reach the State of Texas and this judicial District, including in the Marshall Division.

7. Defendant also maintains commercial websites accessible to residents of the State of Texas and this judicial District, through which Defendant promotes and facilitates sales of the infringing products. For example, Defendant's website <https://global.canon/en/index.html> is accessible to consumers in the United States, including those in the State of Texas and this judicial District, where Canon supplies information about products that can be purchased from online

stores such as Amazon, as well as brick-and-mortar stores located in this judicial District, including Target, Walmart, Costco, and Best Buy.

8. Defendant further availed itself to this District in a separate lawsuit, *Canon Inc. v. TCL Electronics Holdings, Ltd.*, 2:18-cv-546 (E.D. Tex) filed on December 27, 2018, where Defendant filed the suit as a plaintiff in a patent infringement lawsuit. In so doing, Defendant used this Court's judicial resources and received protections from this District's rules and laws. Furthermore, in the Complaint in that action Defendant also set forth that voluntary participation in another lawsuit in this District is a basis for jurisdiction and venue over that party. *See Exhibit C, ¶¶ 7-11.*

9. This Court has general jurisdiction over Defendant due to its continuous and systematic contacts with the State of Texas and this jurisdiction. Further, Defendant is subject to this Court's jurisdiction because it has committed patent infringement in the State of Texas and this jurisdiction.

10. Thus, Defendant has established minimum contacts with the State of Texas and the exercise of jurisdiction would not offend traditional notions of fair play and substantial justice.

11. Venue is proper in this judicial district pursuant to 28 U.S.C. § 1391(b), (c) and 1400(b) because (i) Defendant has done and continues to do business in this district; (ii) Defendant has committed and continues to commit acts of patent infringement in this district, including making, using, offering to sell, and/or selling accused products in this district, and/or importing accused products into this district, including by internet sales and sales via retail and wholesale stores, and/or inducing others to commit acts of patent infringement in this district; and (iii) Defendant is foreign entity. 28 U.S.C. § 1391(c)(3) provides that "a defendant not resident in the United States may be sued in any judicial district." *See also Brunette Machine Works v. Kockum*

Industries, Inc., 406 U.S. 706 (1972), holding that venue is proper pursuant to 28 U.S.C. §§ 1391 and 1400(b) when Defendant is a foreign entity.

FACTUAL ALLEGATIONS

12. Neal Solomon is the sole inventor of U.S. Patent No. 7,612,805, entitled “Digital Imaging System and Methods for Selective Image Filtration” (Exhibit A, “‘805 Patent”) and a continuation from the ‘805 application, U.S. Patent No. 8,451,339, entitled “Digital Imaging System for Correcting Image Aberrations” (Exhibit B, “‘339 Patent”) (collectively the “Asserted Patents”). The Asserted Patents share the same specification and priority date of July 11, 2006.

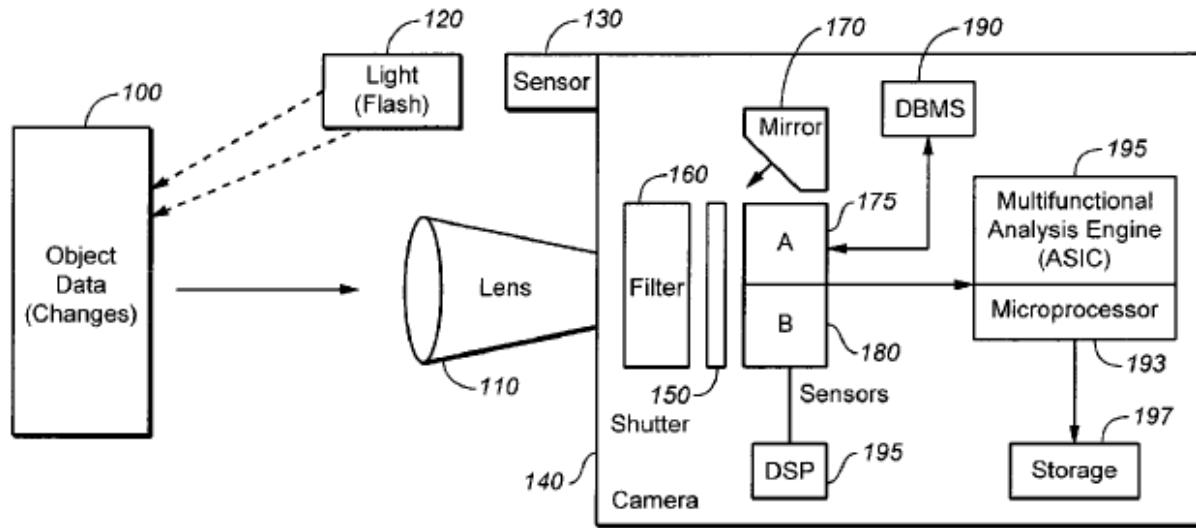
13. OIT, a Texas limited liability company formed by Mr. Solomon in 2009, owns the Asserted Patents.

14. The Asserted Patents are directed toward digital imaging systems, namely in-camera systems for filtering and correcting image aberrations or distortions. The systems as claimed relate to a combination of hardware and software throughout the cameras. The Abstract for the ‘339 patent, for example, states as follows:

A system is disclosed for the automated correction of optical and digital aberrations in a digital imaging system. The system includes (a) digital filters, (b) hardware modifications and (c) digital system corrections. The system solves numerous problems in still and video photography that are presented in the digital imaging environment.

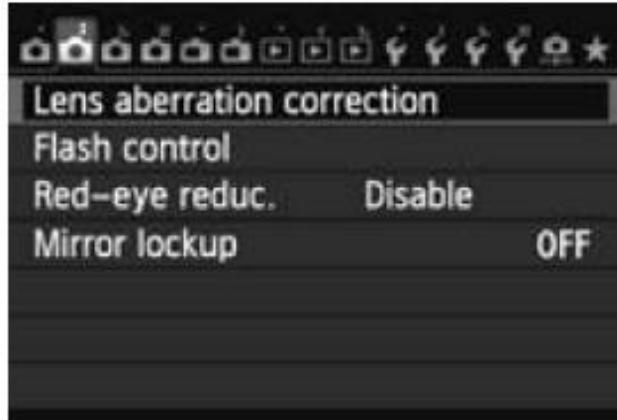
15. The Asserted Patents describe a tangible system comprising aberration correction software particular to various types of lenses, a database system for useful access to that software, and specially designed processors which operate on that software to correct specifically enumerated aberrations. The Asserted Patents describe a claimed combination of dedicated elements and processes that were not, at the time of invention, well-understood, routine, or conventional.

16. An exemplary embodiment is shown in Figure 1 of each of the Asserted Patents:



17. Defendant imports, has imported, sells, has sold for sale and/or offers for sale in the United States cameras and lenses that are not made or licensed by OIT and that infringe the Asserted Patents (“Infringing Products”).

18. Canon markets its Infringing Products specifically extolling the functionality of the Asserted Patents. As one example, Canon markets infringing functionality of Infringing Products as “lens aberration correction” in published material including at least online material for Canon cameras. Manuals for Canon cameras, for example, the user manual for the Canon EOS 70D, include instructions for using the aberration correction capabilities of the camera. Lens aberration correction is further included in the camera-user interface:



EOS 70D Instruction Manual, at 107. On further information and belief, Canon point-and-shoot cameras with integrated lenses also perform lens aberration correction in accordance with the Asserted Patents, including as one nonlimiting example the PowerShot G15.



19. On information and belief, all Canon digital cameras that include digital lens aberration correction imported, sold, offered for sale or used in the United States within the statutory period are Infringing Products, including but not limited to the following: EOS digital cameras including but not limited to EOS 1-D X, EOS 1-D X Mark II, EOS-1D C, EOS 5DS / EOS 5DS R, EOS 5D Mark III, EOS 5D Mark IV, EOS 6D, EOS 6D Mark II, EOS R, EOS RP, EOS 7D Mark II, EOS 70D, EOS 80D, EOS77D, EOS Rebel T7i, EOS Rebel SL2, EOS Rebel T7, EOS M5, EOS M6, EOS M50, EOS M100, as well as PowerShot digital cameras that include image correction including but not limited to G1 X, G15, G16, G1 X Mark II, G7 X, G3 X, G5 X, G9 X, G7 X Mark II, G9 X Mark II and G1 X Mark III.

20. On information and belief, all Canon digital video cameras imported, sold, offered for sale or used in the United States within the statutory period that include digital lens aberration

correction also are Infringing Products, including but not limited to the following: EOS video cameras that include image correction including but not limited to EOS C100, EOS C100 Mark II, EOS-1D C, EOS C200 series, EOS C300 series, EOS C300 Mark II series, EOS C700 series; VIXIA models that include image correction including g but not limited to the VIXIA HF G50; and XA models that include image correction including but not limited to the XA20. The model numbers listed in this complaint are exemplary and not exhaustive.

COUNT I
(Infringement of the '805 Patent)

21. OIT repeats and re-alleges the allegations contained in paragraphs 1-20 of this Complaint as if fully set forth herein.

22. The '805 Patent entitled "Digital Imaging System and Methods for Selective Image Filtration" was duly and legally issued by the U.S. Patent and Trademark Office on November 3, 2009 from Application No. 11/825/521, published at US2008/0174678 on Jul. 24, 2008, claiming priority to provisional applications 60/807,065 filed on Jul. 11, 2006. A true and accurate copy of the '805 Patent is attached hereto as Exhibit A.

23. Each and every claim of the '805 Patent is valid and enforceable, and each enjoys a statutory presumption of validity under 35 U.S.C. § 282.

24. OIT exclusively owns all rights, title, and interest in and to the '805 Patent and possesses the exclusive right of recovery, including the exclusive right to recover for past infringement.

25. Claim 9 of the '805 Patent reads as follows and covers the Infringing Products with zoom lenses:

A digital imaging system for image filtration comprising:
a digital camera mechanism, an optical lens mechanism, a digital sensor, a microprocessor, a digital signal processor, an application specific integrated

circuit, system software, a database management system and a memory storage sub-system;
wherein the aberrations from the optical lens mechanism are corrected by applying digital filtration by using the application specific integrated circuit and the digital signal processor;
wherein the microprocessor is used to provide digital and optical data to the digital signal processor;
wherein the system software is organized to identify specific optical aberrations and to access the database to identify specific corrections to the aberrations;
wherein the system software forwards the data from the digital sensor to the digital processor;
wherein the digital signal processor selects a specific procedure to optimize the image and corrects the aberrations;
wherein the lens type is a zoom lens;
wherein the lens focal length alternates from specific fixed focal length lens settings in a succession of steps;
wherein optical aberrations are corrected with digital filtration to modify multiple images from different focal lengths in a succession of data files; and
wherein the modified data file consisting of the digital data optimized from the aberrations that are corrected from the original optical image is stored in memory.

26. Claim 24 of the '805 Patent reads as follows and covers a method of using the

Infringing Products with zoom lenses:

A method of image filtration comprising:
a digital camera mechanism, an optical lens mechanism, a digital sensor, a microprocessor, a digital signal processor, an application specific integrated circuit, system software, a database management system and a memory storage sub-system;
wherein the aberrations from the optical lens mechanism are corrected by applying digital filtration by using the application specific integrated circuit and digital signal processor, the method consisting of;
alternating the lens focal length of a zoom lens from specific fixed focal length lens settings in a succession of steps;
creating data files corresponding to each focal length lens setting;
forwarding the data from a digital sensor to the digital signal processor;
providing digital and optical data to a digital signal processor;
identifying specific optical aberrations and accessing a database to identify specific corrections to the aberrations;
selecting a specific procedure from the database using the microprocessor to optimize the image and correct the aberrations;

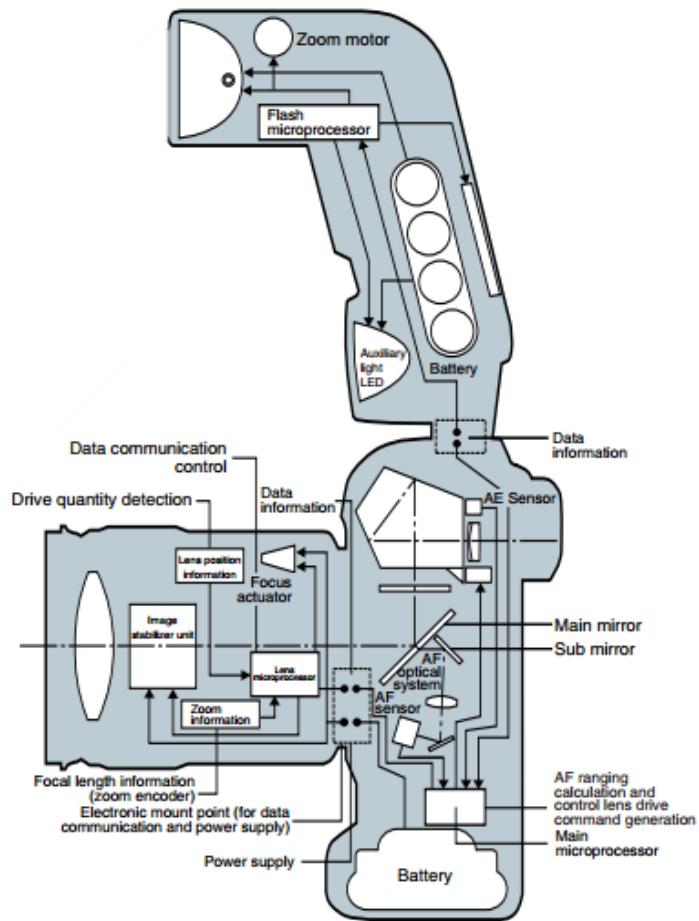
applying digital filtration by using the application specific integrated circuit and digital signal processor to correct digital or optical aberrations; correcting optical aberrations with digital filtration to modify multiple images from different focal lengths in a succession of data files; and storing the modified data files in memory.

27. Each Infringing Product is a digital camera that constitutes a digital imaging system for image filtration comprising a digital camera mechanism, an optical lens mechanism, a digital sensor, a microprocessor, a digital signal processor, an application specific integrated circuit, system software, a database management system and a memory storage sub-system. The cameras require optical lens mechanisms to operate, and an example of one such camera body and lens is shown on a Canon website here:



<https://www.usa.canon.com/internet/portal/us/home/products/details/cameras/eos-dslr-and-mirrorless-cameras/dslr/eos-70d>.

28. Canon published the basic layout of its digital cameras in block diagram form that preceded the Infringing Products and on information and belief that diagram also shows certain components in the Infringing Products. The block diagram sets out a basic layout of the optical lens mechanism, digital sensor, and microprocessors in camera. This diagram is published in a book by Canon with periodic updates entitled *Canon EF Lens Work III - The Eyes of EOS*:



See, e.g., <https://www.scribd.com/doc/6610645/Canon-EF-Lens-Work-III-The-Eyes-of-EOS>

Sept, at 168.

29. On information and belief, each of the Infringing Products with a zoom lens further includes a database management system and memory storage sub-system, containing and directing data allowing the aberrations from the optical lens mechanism to be corrected by applying digital filtration by using the application specific integrated circuit and the digital signal processor; wherein the microprocessor is used to provide digital and optical data to the digital signal processor; wherein the system software is organized to identify specific optical aberrations and to access the database to identify specific corrections to the aberrations; wherein the system software

forwards the data from the digital sensor to the digital processor; wherein the digital signal processor selects a specific procedure to optimize the image and corrects the aberrations.

30. On information and belief, each of the Infringing Products with a zoom lens further includes a database management system and memory storage sub-system, wherein the aberrations from the optical lens mechanism are corrected by applying digital filtration by using the application specific integrated circuit and the digital signal processor; wherein the microprocessor is used to provide digital and optical data to the digital signal processor; wherein the system software is organized to identify specific optical aberrations and to access the database to identify specific corrections to the aberrations; wherein the system software forwards the data from the digital sensor to the digital processor; wherein the digital signal processor selects a specific procedure to optimize the image and corrects the aberrations; wherein the lens type is a zoom lens; wherein the lens focal length alternates from specific fixed focal length lens settings in a succession of steps; wherein optical aberrations are corrected with digital filtration to modify multiple images from different focal lengths in a succession of data files; and wherein the modified data file consisting of the digital data optimized from the aberrations that are corrected from the original optical image is stored in memory.

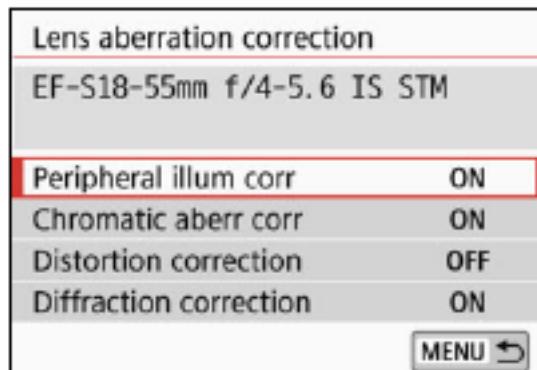
31. As one example, the EOS 70D includes lens aberration correction based on stored lens information and stores that information in a database in the camera. The EOS 70D is used with a variety of compatible zoom lenses. According to Canon, “the EOS 70D is compatible with over 103 Canon EF lenses.” <https://www.usa.canon.com/internet/portal/us/home/products/details/cameras/eos-dslr-and-mirrorless-cameras/dslr/eos-70d>. The EOS 70D also has a digital sensor, specifically a 20.2 Megapixel CMOS (APS-C) sensor. *Id.* The EOS 70D stores and uses database data for lens aberration correction. For example, the user manual for the camera at p. 107 states:

“Peripheral light fall-off is a phenomenon that makes the image corners look darker due to the lens characteristics. Color fringing along subject outlines is called chromatic aberration. Both lens aberrations can be corrected. The default settings are [Enable] for both corrections.” At p. 108 the same manual states, “The camera already contains lens peripheral illumination correction data and chromatic aberration correction data for approx. 25 lenses. If you select [Enable], the peripheral illumination correction and chromatic aberration correction will be applied automatically for any lens whose correction data is registered in the camera. With EOS Utility (provided software), you can check which lenses have their correction data registered in the camera. You can also register the correction data for unregistered lenses.” Similarly, the EOS 5DS and EOS 5DS R perform “In-camera lens aberration correction.” https://cpn.canon-europe.com/content/education/technical/inside_the_eos_5ds_and_eos_5ds_r.do. The Infringing Products may include one or both of these aberration corrections and/or may include other optical aberration corrections.

32. Canon Infringing Products use at least one application specific integrated circuit (ASIC) and a digital signal processor as well as a microprocessor in proprietary circuitry known as “DIGIC” or “DiG!C.” The EOS 70D, for example, according to Canon, includes a “powerful DIGIC 5+ Image Processor.” <https://www.usa.canon.com/internet/portal/us/home/products/details/cameras/eos-dslr-and-mirrorless-cameras/dslr/eos-70d>. See also EOS 70D Instruction Manual, at 37 (use with zoom lens). On information and belief, the Infringing Products include onboard software that directs the digital signal processor to select a specific procedure to optimize the image and correct aberrations wherein the lens focal length alternates from specific fixed focal length lens settings in a succession of steps; wherein optical aberrations are corrected with digital filtration to modify multiple images from different focal lengths in a succession of

data files; and wherein the modified data file consisting of the digital data optimized from the aberrations that are corrected from the original optical image is stored in memory.

33. On information and belief, Canon digital cameras also infringe by applying other in-camera correction. As one additional nonlimiting example, Canon's EOS Rebel SL2 cameras include not only peripheral illumination and chromatic aberration correction, but also diffraction correction as seen, for example, in the EOS Rebel SL2 Instruction Manual posted by Canon on the Internet at p. 153:



34. As with the EOS 70D, the information regarding lens aberration correction data in the EOS Rebel SL2 and other Canon Infringing Products is stored in an in-camera database. The same instruction manual at p. 157, for example, states, "The lens aberration correction data for lens aberration corrections is registered (stored) in the camera. With [Enable] selected, the peripheral illumination correction, chromatic aberration correction, distortion correction, and diffraction correction will be applied automatically. With EOS Utility (EOS software, p.444), you can check which lenses have their correction data registered in the camera. You can also register the correction data for unregistered lenses."

35. Canon Infringing Products use the ASIC and digital signal processor following the ‘805 Patent claims above to apply digital correction to both still and motion images, *i.e.*, video recording. *See, e.g.,* <https://www.usa.canon.com/internet/portal/us/home/products/details/cameras/eos-dslr-and-mirrorless-cameras/dslr/eos-70d> (“the DIGIC 5+ Image Processor offers real-time compensation for chromatic aberration in both still and motion images”). The Infringing Products may also infringe other claims of the ‘805 Patent.

36. Defendant has been and is now directly infringing, literally and/or under the doctrine of equivalents because without authority it makes, uses, offers to sell, and/or sells within the United States the patented invention of one or more claims, including at least claim 9 and/or claim 24 of the ‘805 Patent. Defendant is therefore liable to OIT for patent infringement under 35 U.S.C. § 271(a).

37. In view of the foregoing, Defendant directly infringes at least claims 9 and/or 24 of the ‘805 Patent.

38. Further, Defendant’s customers and end users who offer for sale, sell, and/or use the Infringing Products directly infringe at least claims 9 and/or 24 of the ‘805 Patent.

39. Furthermore, Defendant has been and is now liable under 35 U.S.C. § 271(b) for actively inducing infringement of one more claims including at least claim 9 and/or claim 24 of the ‘805 patent. On information and belief, as set forth below Canon has or should have had actual notice of the ‘805 Patent since at least 2010. Additionally, Canon has had actual notice of the ‘805 Patent since at least its receipt of OIT’s complaint. Despite such knowledge, Canon has intended that its customers and end users infringe the ‘805 Patent by selling, offering for sale, and/or using the Infringing Products in the United States, and has actively induced such infringement by instructing users in the United States to practice ‘805 patent claims in their user manuals, posted

videos and/or other materials with knowledge of the ‘805 patent as set forth in this complaint and with knowledge of the ‘805 patent since at least the time Canon became aware of the ‘805 Patent.

40. Further, Defendant has been and is now liable under 35 U.S.C. § 271(c) because it offers to sell or sells within the United States or imports into the United States a component of a machine patented by one or more claims including at least claim 9 and/or claim 24 of the ‘805 patent that constitutes a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

41. As a result of Defendant’s infringement of the ‘805 Patent, OIT has suffered and continues to suffer damages. Thus, OIT is entitled to recover from Defendant the damages OIT sustained as a result of Canon’s wrongful and infringing acts in an amount no less than a reasonable royalty, together with interest and costs fixed by this Court under 35 U.S.C. § 284.

42. OIT has suffered damage because of the infringing activities of Defendant, its officers, agents, servants, employees, associates, partners, and other persons who are in active concert or participation therewith, and OIT will continue to suffer irreparable harm for which there is no adequate remedy at law unless Defendant’s infringing activities are preliminarily and permanently enjoined by this Court.

43. Defendant’s infringement of the ‘805 Patent was, is, and continues to be deliberate and willful. The ‘805 Patent application was published on July 24, 2008 and the ‘805 Patent issued on November 3, 2009. On information and belief, Canon has had actual notice of the ‘805 Patent at least as early as 2010 when the published application for the ‘805 Patent (US 2008/0174678) was cited as prior art during the prosecution of one of Canon’s own patent applications, U.S. Patent Appl. No. 12/780,164. The same ‘805 published application was cited again in another Canon

patent application in 2012, U.S. Patent Appl. No. 13/467,098. The same ‘805 published application was cited a third time in 2013 during the prosecution of another of Canon’s patents, U.S. Patent No. 8,861,852. Thus, Canon was informed repeatedly of the disclosures of the ‘805 Patent, but continued to infringe nonetheless. Moreover, Canon was and is on notice of the ‘805 Patent at least as early as the filing of the Complaint in this lawsuit, yet Defendant continued and continues to infringe the ‘805 Patent.

COUNT II
(Infringement of the ‘339 Patent)

44. OIT repeats and re-alleges the allegations contained in paragraphs 1-43 of this Complaint as if fully set forth herein.

45. The ‘339 Patent entitled “Digital Imaging System for Correcting Image Aberrations” was duly and legally issued by the U.S. Patent and Trademark Office on May 28, 2013 from Application No. 12/586,221, claiming priority to the ‘805 Patent application as well as the provisional application 60/807,065 filed on Jul. 11, 2006. A true and accurate copy of the ‘339 Patent is attached hereto as Exhibit B.

46. Each and every claim of the ‘339 Patent is valid and enforceable, and each enjoys a statutory presumption of validity under 35 U.S.C. § 282.

47. OIT exclusively owns all rights, title, and interest in and to the ‘339 Patent and possesses the exclusive right of recovery, including the exclusive right to recover for past infringement.

48. Claim 6 of the ‘339 Patent recites:

A digital imaging system for correcting image aberrations comprising:
a digital camera mechanism, an optical lens mechanism, a digital sensor, an integrated circuit, a digital signal processor, system software, a database management system and a memory storage sub-system;

wherein the optical lens mechanism is a zoom lens or a fixed focal length lens;
wherein the image data file is forwarded from the digital sensor to storage in memory;
wherein at least one optical and/or digital aberration in the image file are identified by comparing image files in the database management system by using the system software and the integrated circuit;
wherein the at least one filtration algorithms required to correct the at least one optical and/or digital aberration are sent from the integrated circuit to the digital signal processor;
wherein the at least one optical and/or digital aberration from the optical lens mechanism are corrected by using the digital signal processor to apply digital filtration algorithm; and
wherein the modified digital file consisting of the digital data optimized from the at least one aberration that are corrected from the original optical image is stored in memory.

49. On information and belief, each of the Infringing Products constitutes a digital imaging system for correcting image aberrations comprising a digital camera mechanism, an optical lens mechanism, a digital sensor, an integrated circuit, a digital signal processor, system software, a database management system and a memory storage sub-system. In each of the Infringing Products, the optical lens mechanism is either a zoom lens or a fixed focal length lens, and each Infringing Products includes memory storage where image data files are forwarded from the digital sensor to storage in memory. Additionally, on further information and belief, in each Infringing Product, at least one optical and/or digital aberration in the image file are identified by comparing image files in the database management system by using the system software and the integrated circuit that is included in the camera, at least one filtration algorithms required to correct the at least one optical and/or digital aberration are sent from the integrated circuit to the digital signal processor, and are corrected by using the digital signal processor to apply digital filtration algorithm, wherein the modified digital file consisting of the digital data optimized from the at least one aberration that are corrected from the original optical image is stored in memory.

50. As one example, the EOS 70D includes lens aberration correction and stores that information in a database in the camera based on stored lens information. The EOS 70D has a variety of compatible lenses including both zoom lenses and fixed focal length lenses. According to Canon, “the EOS 70D is compatible with over 103 Canon EF lenses.”

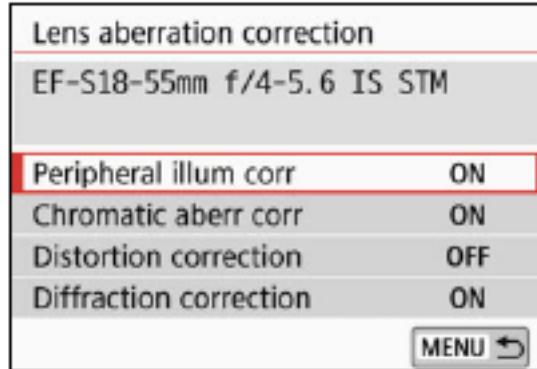
<https://www.usa.canon.com/internet/portal/us/home/products/details/cameras/eos-dslr-and-mirrorless-cameras/dslr/eos-70d>. See also EOS 70D Instruction Manual, at 37 (use with zoom lens). The EOS 70D also has a digital sensor, specifically a 20.2 Megapixel CMOS (APS-C) sensor. *Id.* It stores and uses database data for lens aberration correction. For example, the user manual for the camera at p. 107 states: “Peripheral light fall-off is a phenomenon that makes the image corners look darker due to the lens characteristics. Color fringing along subject outlines is called chromatic aberration. Both lens aberrations can be corrected. The default settings are [Enable] for both corrections.” At p. 108 the same manual states, “The camera already contains lens peripheral illumination correction data and chromatic aberration correction data for approx. 25 lenses. If you select [Enable], the peripheral illumination correction and chromatic aberration correction will be applied automatically for any lens whose correction data is registered in the camera. With EOS Utility (provided software), you can check which lenses have their correction data registered in the camera. You can also register the correction data for unregistered lenses.”

Similarly, the EOS 5DS and EOS 5DS R tout “In-camera lens aberration correction.”

https://cpn.canon-europe.com/content/education/technical/inside_the_eos_5ds_and_eos_5ds_r.do. The Infringing Products may include one or both of these aberration corrections and/or may include other optical and/or digital aberration corrections.

51. On information and belief, Canon digital cameras also infringe by applying other in-camera correction. As one additional nonlimiting example, Canon’s EOS Rebel SL2 cameras

include not only peripheral illumination and chromatic aberration correction, but also diffraction correction as seen, for example, in the EOS Rebel SL2 Instruction Manual posted by Canon on the Internet at p. 153:



52. As with the EOS 70D, the information regarding lens aberration correction data in the EOS Rebel SL2 and other Canon Infringing Products is stored in an in-camera database. The same instruction manual at p. 157, for example, states, “The lens aberration correction data for lens aberration corrections is registered (stored) in the camera. With [Enable] selected, the peripheral illumination correction, chromatic aberration correction, distortion correction, and diffraction correction will be applied automatically. With EOS Utility (EOS software, p.444), you can check which lenses have their correction data registered in the camera. You can also register the correction data for unregistered lenses.”

53. Canon digital cameras use an application specific integrated circuit (ASIC) with a digital signal processor in proprietary circuitry known as “DIGIC” or “DiG!C.” The EOS 70D, for example, according to Canon, includes a “powerful DIGIC 5+ Image Processor.” <https://www.usa.canon.com/internet/portal/us/home/products/details/cameras/eos-dslr-and-mirrorless-cameras/dslr/eos-70d>. The EOS 70D includes memory storage, which, on information and belief, includes permanent memory resident in the camera, and also includes memory card storage for image files as set forth in the user manuals. *See, e.g.*, EOS 70D Instruction Manual, at

3 & 27. On information and belief, the Infringing Products include onboard software that directs the aberration correction information from memory and applies it to image files from the digital sensor using the integrated circuit and the digital signal processor in accordance with claim 6 of the ‘339 Patent, wherein the digital signal processor is used to apply a digital filtration algorithm to the image files, and then a modified digital file with the data optimized from the aberration correction is stored in memory and can be accessed by the user. *See, e.g.*, EOS 70D Instruction Manual, at 107 (“The image will be recorded with the [peripheral illumination corrected.”), 108 (“The image will be recorded with the chromatic aberration corrected.”).

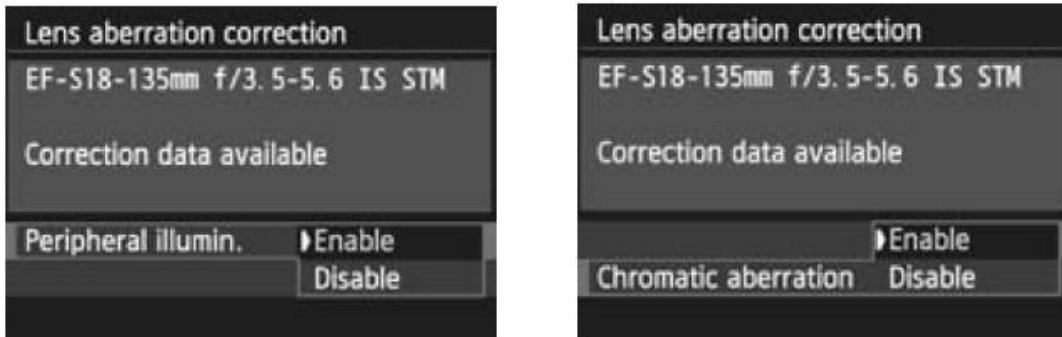
54. Furthermore, on information and belief, Infringing Products imported, sold, offered for sale, and/or used with fixed focal length lenses infringe at least claim 1 of the ‘339 Patent, because each of them constitutes a digital imaging system for correcting optical image aberrations comprising: a digital camera mechanism, an optical lens mechanism, a digital sensor, a microprocessor, a digital signal processor, system software, a database management system and a memory storage sub-system; wherein the optical lens mechanism is a fixed focal length lens; wherein a microprocessor uses system software to identify at least one optical aberration by accessing the database; wherein the microprocessor uses the database to identify at least one algorithm to use to correct the at least one optical aberration; wherein when the image file is captured by the digital sensor the digital file is forwarded to the digital signal processor; wherein the image file with the at least one optical aberration is corrected by applying digital filtration by using at least one algorithm in the digital signal processor; and wherein the modified digital file consisting of the digital data optimized from the at least one optical aberration that are corrected from the original optical image is stored in memory. Information from Canon describing specific examples of this process is discussed above.

55. Furthermore, on information and belief, the Infringing Products imported, sold, offered for sale, and/or used with zoom lenses infringe at least claim 14 of the ‘339 Patent because each of them constitutes a digital imaging system for correcting image aberrations comprising: a digital camera mechanism, an optical lens mechanism, a digital sensor, a microprocessor, a digital signal processor, system software, a database management system and a memory storage subsystem; wherein the optical lens mechanism is a zoom lens; wherein the zoom lens changes focal length positions; wherein when the image file is captured by the digital sensor the file is forwarded to the digital signal processor and to memory; wherein the microprocessor uses system software to access the database to identify at least one optical aberration in the image file at any focal length of a zoom lens configuration; wherein the microprocessor accesses the database to obtain at least one filtration correction algorithm to the optical aberrations and forwards the at least one filtration algorithm to the digital signal processor; wherein the image file is forwarded to the digital signal processor which applies at least one filtration algorithm to optimize the image and corrects the at least one optical aberration at the specific focal length in the zoom lens configuration; and wherein the modified image file consisting of the digital data optimized from the at least one optical aberration of a specific focal length of the zoom lens that are corrected from the original optical image is stored in memory. Information regarding specific examples of this process is discussed above.

56. Furthermore, on information and belief, the use of DIGIC processors in each of the Infringing Products includes a microprocessor, an application specific integrated circuit or a system on a chip, and therefore also infringes claim 12 of the ‘339 Patent.

57. Additionally, as Canon advertises and publishes in its user manuals, the lens aberration corrections applied include at least peripheral illumination and chromatic (comatic)

aberration corrections and therefore infringe at least claims 2, 3, 7, 13, 15, and 18 of the ‘339 Patent. See, for example, EOS 70D Instruction Manual, at 107-08:



58. Peripheral illumination correction in the Infringing Products, for example, is used to correct lens vignetting. <https://www.dummies.com/photography/cameras/canon-camera/correct-lens-vignetting-peripheral-illumination-correction-canon-eos-rebel-t61300d/>.

Chromatic aberration correction is used to correct optical chromatic (comatic) aberrations.

59. The Infringing Products may also infringe other claims of the ‘339 Patent that depend from claims 1, 6 and/or 14. As one non-limiting example, to the extent the digital signal processing circuitry in an Infringing Product applies a fast Fourier transform (FFT) algorithm to correct optical and/or digital aberrations, it also infringes claims 4, 9 and/or 16 of the ‘339 Patent.

60. Defendant has been and is now directly infringing, literally and/or under the doctrine of equivalents because without authority it makes, uses, offers to sell, and/or sells within the United States the patented invention of one or more claims of the ‘339 Patent as set forth above. Defendant is therefore liable to OIT for patent infringement under 35 U.S.C. § 271(a).

61. In view of the foregoing, Defendant directly infringes at least claims 1, 6, 12 and 14 of the ‘339 Patent.

62. Further, Defendant’s customers and end users who offer for sale, sell, and/or use the Infringing Products directly infringe at least claims 1, 6, 12 and 14 of the ‘339 Patent.

63. Furthermore, Defendant has been and is now liable under 35 U.S.C. § 271(b) for actively inducing infringement of one more claims including at least claims 1, 6, 12 and 14 of the ‘339 patent. On information and belief, as set forth below Canon has or should have had actual notice of the ‘339 Patent since at least 2010. Additionally, Canon has had actual notice of the ‘339 Patent since at least its receipt of OIT’s complaint. Despite such knowledge, Canon has intended that its customers and end users infringe the ‘339 Patent by selling, offering for sale, and/or using the Infringing Products in the United States, and has actively induced such infringement by instructing users in the United States to practice ‘339 patent claims in their user manuals, posted videos and/or other materials with knowledge of the ‘339 patent as set forth in this complaint and with knowledge of the ‘805 patent since at least the time Canon became aware of the ‘339 Patent.

64. Further, Defendant has been and is now liable under 35 U.S.C. § 271(c) because it offers to sell or sells within the United States or imports into the United States a component of a machine patented by one or more claims of the ‘339 Patent as set forth above that constitutes a material part of the invention, knowing the same to be especially made or especially adapted for use in an infringement of such patent, and not a staple article or commodity of commerce suitable for substantial noninfringing use.

65. As a result of Defendant’s infringement of the ‘805 Patent, OIT has suffered and continues to suffer damages. Thus, OIT is entitled to recover from Defendant the damages OIT sustained as a result of Canon’s wrongful and infringing acts in an amount no less than a reasonable royalty, together with interest and costs fixed by this Court under 35 U.S.C. § 284.

66. OIT has suffered damage because of the infringing activities of Defendant, its officers, agents, servants, employees, associates, partners, and other persons who are in active concert or participation therewith, and OIT will continue to suffer irreparable harm for which there

is no adequate remedy at law unless Defendant's infringing activities are preliminarily and permanently enjoined by this Court.

67. Defendant's infringement of the '339 Patent was, is, and continues to be deliberate and willful. The '805 Patent application with the same specification as the '339 patent was published on July 24, 2008 and the related '805 Patent issued on November 3, 2009. On information and belief, Canon has had actual notice of the '339 Patent at least as early as 2010 when the published application sharing the same specification as the '339 Patent (US 2008/0174678) was cited as prior art during the prosecution of one of Canon's own patent applications, U.S. Patent Appl. No. 12/780,164. The same published application was cited again in another Canon patent application in 2012, U.S. Patent Appl. No. 13/467,098. The same published application was cited a third time in 2013 during the prosecution of another of Canon's patents, U.S. Patent No. 8,861,852. Thus, Canon was informed repeatedly of the disclosures of the '339 Patent, but continued to infringe nonetheless. Moreover, Canon was and is on notice of the '339 Patent at least as early as the filing of the Complaint in this lawsuit, yet Defendant continued and continues to infringe the '339 Patent.

PRAAYER FOR RELIEF

WHEREFORE, Plaintiff OIT respectfully requests that this Court enter:

- A. A judgment in favor of OIT that the Defendant has and is infringing the Asserted Patents;
- B. A judgment declaring Defendant's infringement to be willful.
- C. A judgment declaring that this case is exceptional within the meaning of 35 U.S.C. § 285;

D. A permanent injunction enjoining Defendant, its officers, directors, agents, servants, employees, associates, partners, and other persons who are in active concert or participation with Defendant, from infringing the Asserted Patents and/or such other equitable relief the Court determines is warranted in this case;

E. A judgment and order requiring the Defendant to pay to OIT its damages for reasonable royalties and/or other statutory damages, enhanced damages, costs, expenses, prejudgment and post-judgment interest, and attorneys' fees, if applicable, for the Defendant's infringement of the Asserted Patents as provided under 35 U.S.C. §284 and/or §285, and an accounting of ongoing post-judgment infringement; and

F. Any and all other relief, at law or in equity that this Court deems just or proper.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, OIT hereby demands a trial by jury of all issues so triable.

Dated: July 8, 2019

Respectfully submitted,

By: /s/ Korula T. Cherian _____

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